NEVADA CLIMATE SUMMARY

Quarterly Summary
July, August, September
Volume 22, Numbers 7-9

JULY-SEPTEMBER CONDITIONS

By David Walker

Western Nevada

July was primarily very hot and dry because of the high pressure that dominated the area. The later half of July brought scattered thunderstorms caused by warm moist air of the monsoon coming up from Arizona. A record was broken at the Reno-Tahoe International Airport; July was the warmest *month* on record with an average temperature of 80.0°F. The old record was 79.2°F in July of 2003. The four warmest Julys in Reno have been in the past four years since 1888.

There was mostly no rain in the area except for isolated spots that had above average precipitation from thunderstorms. The upper Feather River drainage had no rain at all and the most rain was in Sparks with 0.70" at 333% of normal. One particular thunderstorm passed over Spanish Springs (just north of Sparks) on the 21st. This storm caused flash flooding from the 1.89" of rain that fell within 30 minutes. Spanish Springs High School had $40,000 in damage mostly to the gym floor from 8" of rain pooling on the roof bursting a pipe spilling ½ to 1 inch of water on the floor. Dirt and debris washed down from a burned hillside covering the tennis court, track, parking lot, and athletic fields. ¾" hail covered the ground in areas and two miles east a report of 100 mph wind lasting 2-3 minutes was logged!

High pressure was dominant through August with occasional monsoon moisture pushing up from the south. With the ensuing high pressure this was the second warmest August on record with the first being in 2001. The monsoon moisture made for numerous Urban and Small Stream Flood Advisories. No flooding occurred but on the 6th southern Washoe County received almost an inch of rain in less than an hour. On the same day a mud and rock slide blocked highway 341 near Virginia City on Geiger Grade. Even though 36 out of 88 stations reported no rain, heavy thunderstorms caused above average precipitation in places. Most notable was South Lake Tahoe airport experiencing 0.93", which is 547% of normal!

September brought slightly higher than normal temperatures and below normal precipitation. The central great basin received no rain at all. A pacific storm did come through on the 8th and 9th dropping rain, small hail and strong winds. Another system moved in on the 23rd with very little precipitation but strong winds.

Eastern Nevada

A seasonally common high-pressure system established itself over the region bringing above average temperatures. Elko and Ely experienced their 10th warmest July on record.

This area also felt the affects of the monsoon later in the month causing scattered convective systems (clusters of thunderstorms). No rain fell over most of the area while some spots received brief dumps of rain. Elko received the most with 220% of normal precipitation for July. Dry lightning and convective winds caused almost a quarter million acres of wildfire in northern Elko County.

August was a continuation of July's weather. Dry lightning and high winds exacerbated the fire hazard. Temperatures were still above normal but not as much as the previous month. In fact, Ely dropped to the freezing point the morning of the 31st.

As in July most stations reported no rain for August. Winnemucca had its second month in a row with zero inches of precipitation. Ely had the most for the region with 1.75", which was 193% of normal.

A succession of low-pressure troughs moved across the area bringing high winds and dry air for September. Temperatures were below normal but there were large variations in temperature. In Winnemucca, for instance, the high for the 2nd was 92°F and nine days later the low was 24°F. The month finished out with below normal precipitation.

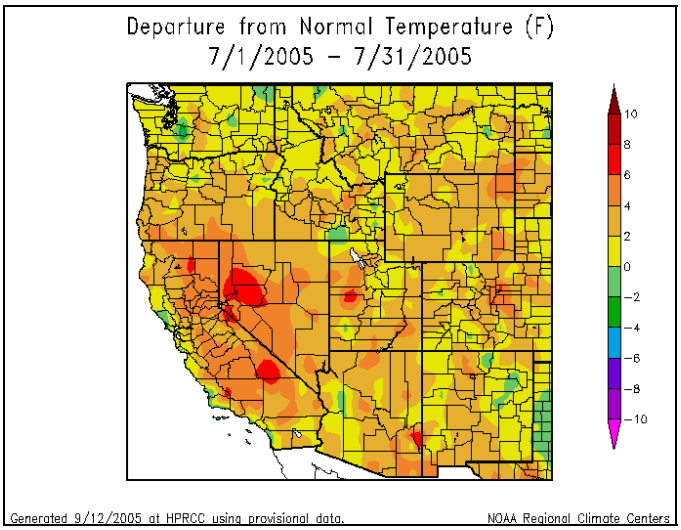
Southern Nevada

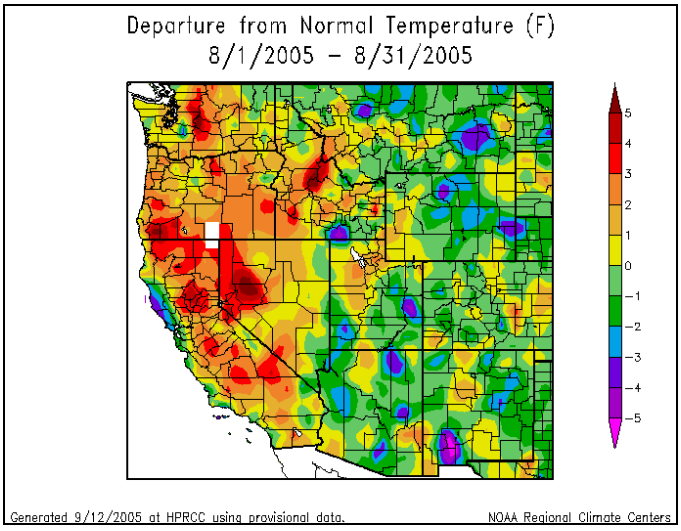
It was the warming July on record in Las Vegas. The 19th topped out at 117°F, which was a tie for the all time high temperature record. A new record of four days above 115°F was set from the 16th to the 19th. These temperatures were the result of a strong subtropical ridge over the area until later in the month. Then the remnants of hurricane Emily crossing over Northern Mexico brought monsoon moisture to the area on the 24th. There were many thunderstorms and on that day flash flooding closed state route 127 north of Baker and highway 95 north of Interstate 40. Precipitation was again spotty with Las Vegas receiving 0.52 inches.

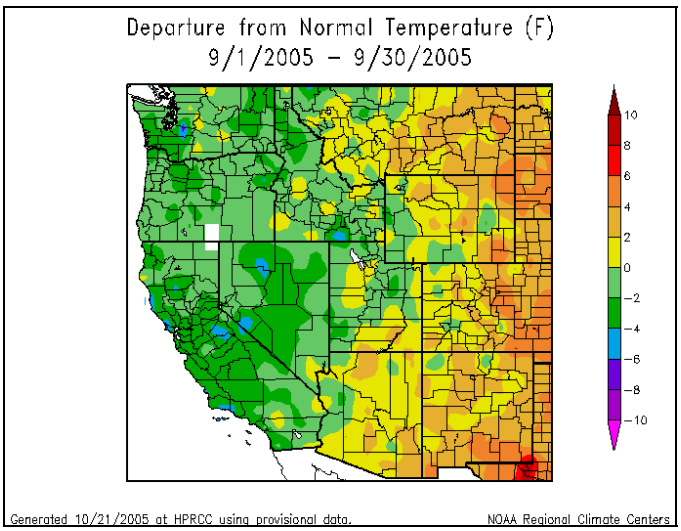
In August the monsoon was in full swing. There were numerous flash floods all across the Mojave Desert. Flash flooding in California and Arizona lead to three separate occasions of people being rescued from their cars. In Cottonwood Cove a large SUV was buried by debris from flooding on the 14th. On that same day flash flooding made roads impassable near Caliente, Cottonwood Cove, Pahrump, Henderson, and Alamo. Some places received incredible amounts of rain for the month. Elgin had 4.99" and Mt. Charleston had 6.52"!

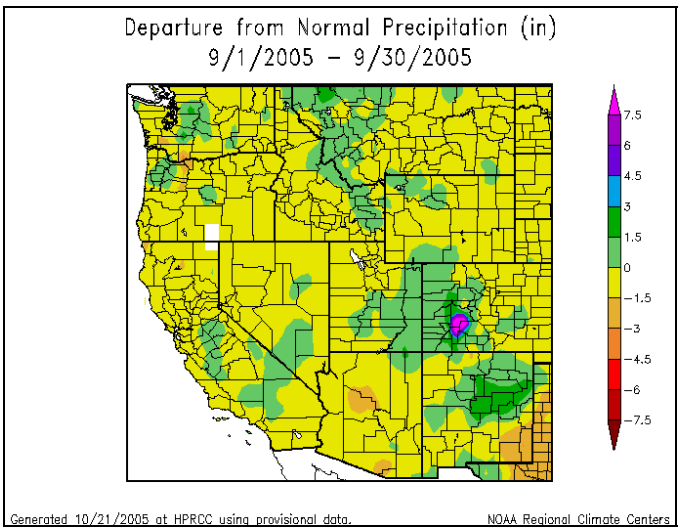
September started out dry with normal to above normal temperatures. Even though on two occasions moisture came into the area, precipitation was below normal. These two events were caused by a low-pressure system off the southern coast of California pulling moisture up to southern Nevada in the later part of the month.

Graphs of departure from normal Temperature

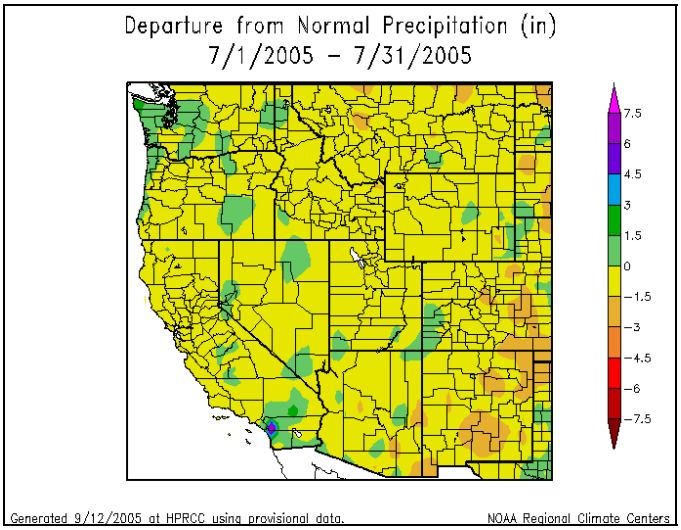


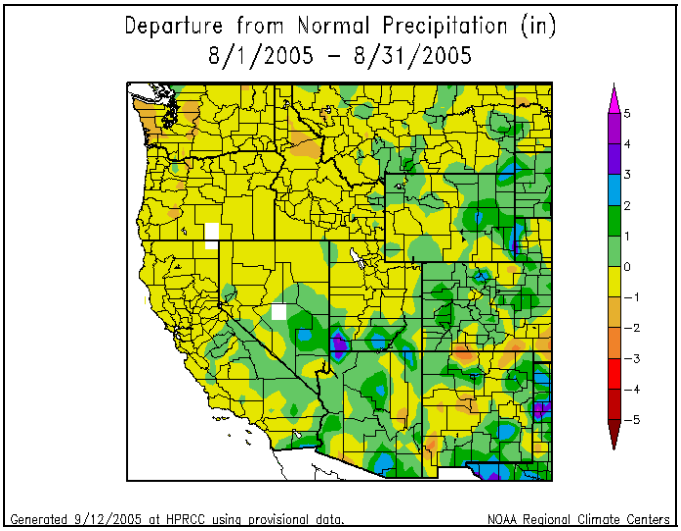




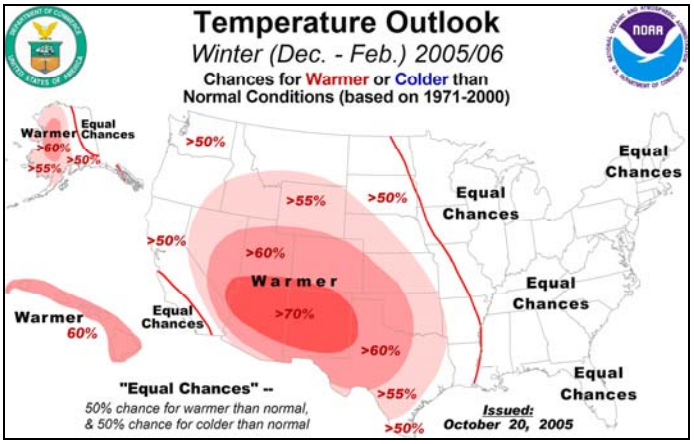


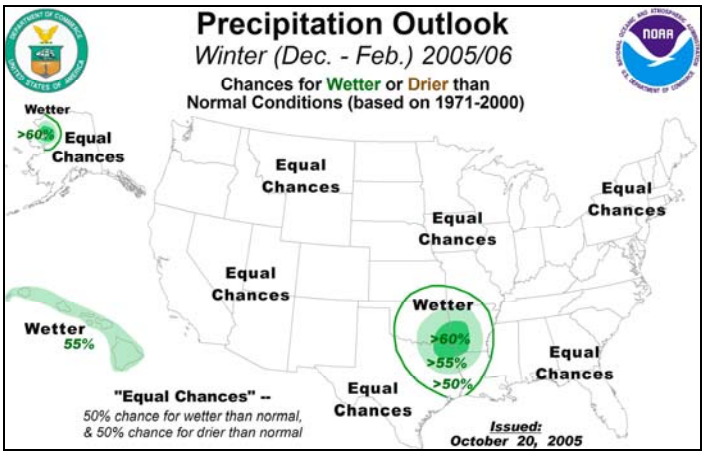
Graphs of departure from normal Precipitation





Winter Outlook





NOAA meteorologist are predicting a warmer winter based on the 30-year norm. However, they are predicting a cooler winter than last year. For the west, an equal chance of above or below normal precipitation is predicted. This means there is “no strong or consistent climate signal” to suggest an above or below normal situation.

Feature Article: Long-term Forecasts and Outlooks

By: Jeffrey Underwood, Nevada State Climatologist

Whether looking at long-term forecasts online at www.cdc.noaa.gov or viewing the graphics that accompany this publication each quarter, one may be left wondering how the 6-month (and longer) forecasts are made. These long-term forecasts it turns out are very different from the daily forecasts that appear in the newspaper and on the television.

First of all daily forecasts have a large component called persistence which is not available to the long-term forecaster. Persistence basically means that the weather tomorrow will look a lot like the weather today. Think about mid-July in southern Nevada. It is very likely that July 15 will look like July 14. This persistence in the forecasted weather exists as large-scale processes often dominate the weather for days at a time. In mid-July it's a large high pressure system. To make a long-term forecast one has to realize that the weather system that is dominant today will be a forgotten memory in 6 months. Actually many large weather systems will come and go over such a longer period.

What then are the foundations of a long-term forecast? The Climate Diagnostics Center (CDC) in Boulder, Colorado is the lead federal agency in making long-term, seasonal forecasts. The maps above with temperature and precipitation outlooks are generated by the CDC. The CDC looks first at the climatology of a region. The climatology in its most basic form gives the average temperature and precipitation for a region over the past 30 years. Knowing the average conditions is the starting point. Forecasting above or below average conditions though crude is about as accurate as one can hope to be when forecasting well into the future.

To estimate the probability of above or below average conditions for a region such as the Great Basin or the Northwest Coast of the US forecasters look to the Pacific Ocean. Specifically forecasters look at what are called teleconnections. Teleconnections are observed links between changes in the ocean and atmospheric conditions in one part of the world and weather changes in another part of the globe. The most famous teleconnection for folks on the West Coast is the El Nino-La Nina cycle.

Forecasters look at atmospheric pressure and sea surface temperature in the southern Pacific Ocean to define an El Nino or La Nina pattern. These patterns have been associated with changing weather across North America (including the West Coast).

Researchers have developed an index called the Southern Oscillation Index to monitor conditions in the southern Pacific. When conditions change over the pacific larger storms may be generated and more importantly for forecasting the tracks of these storms may be pushed a little to the north or a little further south than usual. During strong El Nino periods researchers have seen more Pacific storms moving south of their 'average' track. This means above average precipitation in the long-term for those areas in the new storm track.

In the last two decades dozens of teleconnections have been identified. Some seem a bit farfetched but others have shown great accuracy in foretelling the season temperature and precipitation patterns. Among the teleconnections that are used for long-term forecasting the in western US are: The Southern Oscillation Index, the Pacific Decadal Oscillation, the Artic Oscillation, and the Pacific-North American Oscillation. The Pacific Ocean is not the only body of water to have such powers of prediction; there is also the North Atlantic Oscillation which is linked to changes in weather patterns on the European continent.

These teleconnections are certainly not fool-proof forecast tools. At best they give an indication of what the following season may look like. The astute reader of the Nevada Climate Summary may scratch their heads and wonder why the precipitation forecast for the winter season is so wishy-washy (equal chances for above or below average snowfall). The answer, none of the teleconnection indices are providing a strong signal for this season. Thus we are put in a situation where we will have to wait and see.

STATISTICS FOR THE MONTH OF JULY 2005									
	Extreme High	**Day**	**Extreme Low**	**Day**	**Average High**	**Average Low**	**Average Monthly Temp**	**Precip**	**Snowfall**
Climate Division 1 (NW)									
Cold Springs	101	12	40	23	94	50	72	0.12	0.00
Dayton	100	13	55	3	92	62	80	0.63	0.00
Desert Valley (precip. only)								m	m
Fallon NAS	106	12	52	26	99	61	80	0.10	0.00
Fernley	108	13	56	10	100	65	82	0.44	0.00
Flanigan	107	15	52	4	100	59	79	0.27	0.00
Flying M Ranch	100	12	48	3	94	56	75	0.40	0.00
Gardnerville	100	12	43	4	95	52	73	0.57	0.00
Hay Creek	102	15	50	10	m	m	m	0.33	0.00
Hualapai	m	m	m	m	m	m	m	m	m
Jacks Valley	99	18	54	5	92	62	77	0.40	0.00
Lahontan Nat'l Fish Hatchery	97	18	51	5	92	59	76	0.35	0.00
Minden	103	17	48	4	96	57	77	0.55	0.00
Mogul (precip. Only)								0.05	0.00
Reno, N. Virginia	103	19	54	3	96	61	78	1.07	0.00
Sheridan Acres	100	17	49	4	94	58	76	0.00	0.00
Spanish Springs	101	15	49	4	95	57	76	1.30	0.00
Sulphur	103	18	56	5	98	65	81	0.05	0.00
Vya-Shoestring*	97	18	45	27	89	52	71	0.00	0.00
Washoe #10*	102	12	53	10	96	60	78	0.56	0.00
Wellington	101	12	47	2	94	57	76	0.64	0.00
Wilson Canyon	104	13	43	3	98	58	78	0.31	0.00
Zephyr Cove	m	m	m	m	m	m	m	m	m
Climate Division 2 (NE)									
Jarbidge	99	15	38	3	89	48	69	1.73	0.00
Reese River	100	14	36	26	93	47	70	0.61	0.00
Ruby Valley	98	15	48	4	91	55	73	0.90	0.00
Climate Division 3 (Central)									
Belmont	94	15	47	5	87	54	70	1.50	0.00
Gabbs	107	12	56	26	101	63	82	0.61	0.00
Goldpoint	m	m	m	m	m	m	m	m	m
Manhattan	m	m	m	m	m	m	m	m	m
Marietta	107	16	53	26	101	62	81	0.40	0.00
Pioche - Lister Ranch	102	15-Jan	38	9	93	49	71	1.08	0.00
Schurz (precip. only)								0.00	0.00
Tonopah	105	15	53	4	96	60	78	0.97	0.00
Climate Division 4 (S)									
Boulder Beach	119	18	78	24	109	86	98	0.50	0.00
Las Vegas (NWS Station)	m	m	m	m	m	m	m	m	m
Lee Canyon	108	13	56	10	100	65	82	0.44	0.00
Overton Beach	119	15	71	1	112	80	96	0.14	0.00
Sandy Valley (precip. only)								0.86	0.00
California Stations									
Bare Ranch	m	m	m	m	m	m	m	m	m
Janesville, CA	103	19	56	11	96	65	80	0.00	0.00
Lake Tahoe - USCG	m	m	m	m	m	m	m	m	m
Truckee/Tahoe AP Dist., CA	m	m	m	m	m	m	m	m	m

* - Incomplete data m - Missing data
nr - Not Recorded

STATISTICS FOR THE MONTH OFAUGUST 2005									
	Extreme High	Day	Extreme Low	Day	Average High	Average Low	Average Monthly Temp	Precip	Snowfall
Climate Division 1 (NW)									
Cold Springs	95	4	34	30	89	47	68	0.15	0.00
Dayton	96	5	48	31	89	58	76	0.00	0.00
Desert Valley (precip. only)								m	m
Fallon NAS	102	5	41	31	94	57	76	0.00	0.00
Fernley	107	5	45	31	96	62	79	0.00	0.00
Flanigan	104	5	41	31	96	54	75	0.00	0.00
Flying M Ranch	94	4	40	30	89	54	71	0.00	0.00
Gardnerville	97	4	35	31	91	48	70	0.06	0.00
Hay Creek	100	6	42	30	92	57	75	0.00	0.00
Hualapai	m	m	m	m	m	m	m	m	m
Jacks Valley	94	5	48	31	87	58	72	0.19	0.00
Lahontan Nat'l Fish Hatchery	95	8	44	31	88	55	72	0.08	0.00
Minden	99	4	40	31	92	54	73	0.49	0.00
Mogul (precip. Only)								0.02	0.00
Reno, N. Virginia	102	4	47	31	91	58	74	0.09	0.00
Sheridan Acres	96	4	42	31	90	54	72	0.27	0.00
Spanish Springs	97	4	44	30	91	54	72	0.00	0.00
Sulphur	101	7	46	31	91	59	75	0.00	0.00
Vya-Shoestring	93	4	30	31	87	47	67	0.00	0.00
Washoe #10*	96	4	44	31	89	56	72	0.31	0.00
Wellington	95	4	40	30	90	53	72	0.03	0.00
Wilson Canyon	98	4	43	31	93	55	74	0.00	0.00
Zephyr Cove	m	m	m	m	m	m	m	m	m
Climate Division 2 (NE)									
Jarbidge	93	7	32	30	84	47	65	0.58	0.00
Reese River	95	6	25	31	89	42	65	0.28	0.00
Ruby Valley	96	7	41	31	89	51	70	1.70	0.00
Climate Division 3 (Central)									
Belmont	85	8	39	31	80	50	65	0.24	0.00
Gabbs	100	5	46	31	94	59	76	0.08	0.00
Goldpoint	m	m	m	m	m	m	m	m	m
Manhattan	m	m	m	m	m	m	m	m	m
Marietta	102	28	44	31	95	57	76	0.10	0.00
Pioche - Lister Ranch	92	29-Jan	39	18	85	48	66	1.63	0.00
Schurz (precip. only)								0.00	0.00
Tonopah	98	4	43	31	91	56	74	0.00	0.00
Climate Division 4 (S)									
Boulder Beach	112	29	70	4	101	80	91	2.28	0.00
Las Vegas (NWS Station)	108	29	68	14	100	79	90	0.26	0.00
Lee Canyon	81	28	37	17	70	45	58	5.35	0.00
Overton Beach	114	30	72	15	105	78	92	0.50	0.00
Sandy Valley (precip. only)								2.20	0.00
California Stations									
Bare Ranch	m	m	m	m	m	m	m	m	m
Janesville, CA	101	6	52	30	93	62	77	0.00	0.00
Lake Tahoe - USCG	m	m	m	m	m	m	m	m	m
Truckee/Tahoe AP Dist., CA	90	4	26	30	84	39	62	0.12	0.00

* - Incomplete data m - Missing data
nr - Not Recorded

STATISTICS FOR THE MONTH OF SEPTEMBER 2005									
	Extreme High	**Day**	**Extreme Low**	**Day**	**Average High**	**Average Low**	**Average Monthly Temp**	**Precip**	**Snowfall**
Climate Division 1 (NW)									
Cold Springs	89	1	28	11	75	36	55	0.25	0.00
Dayton	91	2	38	11	77	46	62	0.12	0.00
Desert Valley (precip. only)								m	m
Fallon NAS	95	2	22	19	81	43	63	0.00	0.00
Fernley	96	1	33	25	82	46	64	0.09	0.00
Flanigan	95	2	33	24	81	43	62	0.62	0.00
Flying M Ranch	90	1,30	34	9	75	44	60	0.03	0.00
Gardnerville	90	1	27	11	79	37	58	0.42	0.00
Hay Creek	91	2	31	24	76	44	60	0.30	0.00
Hualapai	m	m	m	m	m	m	m	m	m
Jacks Valley	85	1	34	13	74	44	59	0.21	0.00
Lahontan Nat'l Fish Hatchery	m	m	m	m	m	m	m	m	m
Minden	92	1	30	11	79	42	60	0.33	0.00
Mogul (precip only)								0.05	0.00
Reno, N. Virginia	90	1	38	25	76	46	61	0.05	0.00
Sheridan Acres	89	1	32	11	77	42	60	0.30	0.00
Spanish Springs	m	m	m	m	m	m	m	m	m
Sulphur	93	3	34	12	77	43	60	0.28	0.00
Vya-Shoestring	88	2	18	26	73	32	52	0.08	0.00
Washoe #10	86	1	34	11	76	44	60	0.01	0.00
Wellington	91	2	32	11	77	42	60	0.44	0.00
Wilson Canyon	95	2	27	25	79	42	61	0.08	0.00
Zephyr Cove									
Climate Division 2 (NE)									
Jarbidge	88	2	24	25	74	37	56	0.45	0.00
Reese River	89	2	16	30	77	29	53	0.24	0.00
Ruby Valley	96	7	41	31	83	40	61	1.03	0.00
Climate Division 3 (Central)									
Belmont	78	2	28	25	70	39	54	0.74	0.00
Gabbs	92	2	34	25	79	44	61	0.00	0.00
Goldpoint	m	m	m	m	m	m	m	m	m
Manhattan	m	m	m	m	m	m	m	m	m
Marietta	95	2	35	25	83	43	63	0.02	0.00
Pioche - Lister Ranch	85	1-Jan	25	30	77	38	57	0.45	0.00
Schurz (precip. only)								0.00	0.00
Tonopah	90	1	34	25	78	44	61	0.42	0.00
Climate Division 4 (S)									
Boulder Beach	106	2	60	12	96	73	84	0.00	0.00
Las Vegas (NWS Station)	102	8	63	13	93	71	82	T	0.00
Lee Canyon	76	1	28	13	67	36	52	1.21	0.00
Overton Beach	107	3	57	13	98	67	82	0.00	0.00
Sandy Valley (precip. only)								0.22	0.00
California Stations									
Bare Ranch*	90	4	28	27	80	41	61	0.03	0
Janesville, CA	90	3	37	24	78	51	65	1.48	0.00
Lake Tahoe - USCG	m	m	m	m	m	m	m	m	m
Truckee/Tahoe AP Dist., CA	85	1	19	10	70	27	49	0.16	0.00

* - Incomplete data m - Missing data
nr - Not Recorded

Nevada State Climate Office
University of Nevada, Reno
116 Mackay Science Hall, ms-154
Reno, Nevada 89557-0118

Nonprofit Org.
U.S. Postage
PAID
Reno, Nevada
Permit No. 26

Water Year 2005 (10/1/04- 09/30/05) Totals

Station	Precipitation Total 2005 (in.)*	Water Year Normal (in.)*	% of Normal for 2005
Winnemucca	9.78	8.33	117
Elko	13.71	9.59	143
Ely	14.53	9.97	146
Fernley	8.92	6.06	147
Gerlach	11.63	7.9	147
Tahoe City, CA	38.02	32.66	116
Mt Rose ski	57.1	52.08	110
Reno-Tahoe AP	10.24	7.48	137
Sutcliffe	8.27	7.67	108
Carson City	11.39	10.36	110
Fallon	7.18	5.3	135
Minden	10.06	8.38	120
Hawthorne	5.59	4.46	125
Yerington	7.28	5.31	137
Lovelock	8.4	5.9	142
Mina	7.91	6.07	130
Las Vegas	10.3	4.49	229
Kingman, AZ	16.47	10.00	165
Bishop, CA	11.25	5.02	224

*water-equivalent or melted precipitation